IN THE SPECIFICATION:

Please replace the paragraph on page 4, beginning at line 4, with the following paragraph:

--Surprisingly, the present inventors have discovered a portable DNA sequence capable of directing the recombinant-DNA synthesis of metalloproteinase inhibitors. These metalloproteinase inhibitors are biologically equivalent to those isolated from human skin fibroblast cultures. The metalloproteinase inhibitors of the present invention, prepared by the recombinant DNA methods set forth herein, will enable increased research into prevention and treatment of metalloproteinase-induced connective tissue diseases. In addition, the metalloproteinase inhibitors of the present invention are useful in neutralizing metalloproteinases, including the excess metalloproteinase associated with disease states. Therefore, it is believed that a cure for these diseases will be developed which will embody, as an active ingredient, the metalloproteinase inhibitors of the present invention. Furthermore, the metalloproteinase inhibitors of the present invention are capable of interacting with their metalloproteinase targets in a manner which allows the development of diagnostic tests for degradative connective tissue diseases using the newly discovered inhibitors.--

Please replace the paragraph on page 7, beginning at line 11, with the following paragraph:

--The coding strand of a first preferred DNA sequence which has been discovered has the following nucleotide sequence (SEQ ID No: 5):--

Please replace the paragraph on page 8, beginning at line 12, with the following paragraph:

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--A second preferred DNA sequence has been discovered which has an additional nucleotide sequence 5' to the initiator sequence. This sequence, which contains as the eighty-second through four-hundred-thirty-second nucleotides nucleotides 1 through 351 of the first preferred sequence set forth above, has the following nucleotide sequence (SEQ ID No: 6):--

Please replace the paragraph on page 9, beginning at line 5, with the following paragraph:

--A third preferred DNA sequence which incorporates the 5' region of the second preferred sequence and the 3' sequence of the first preferred sequence, has the following nucleotide sequence (SEQ ID No: 7):--

Please replace the last paragraph on page 13 with the following paragraph:

--A first preferred portable DNA sequence of the present invention has a nucleotide sequence SEQ ID No: 5 as follows:--

Please insert, on page 15, after line 5, "Thymidylic Acid T," the following new paragraphs:

--The first preferred portable DNA sequence encodes a metalloproteinase inhibitor having, as a mature protein, the amino acid sequence SEQ ID No: 1 of Table 1 (using the three letter abbreviations for amino acids). The amino acid at position +1 is cysteine (Cys). The amino acid at position +184 is alanine (Ala). As seen in the other preferred portable DNA sequences described below, the DNA sequence encoding a metalloproteinase inhibitor may also encode leader sequences. The leader sequences may be designated by negative numbers beginning with -1.

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TABLE 1

```
                                          +1
                                          Cys Thr Cys Val Pro Pro His Pro Gln    9
Thr Ala Phe Cys Asn Ser Asp Leu Val Ile Arg Ala Lys Phe Val Gly Thr Pro Glu Val   29
Asn Gln Thr Thr Leu Tyr Gln Arg Tyr Glu Ile Lys Met Thr Lys Met Tyr Lys Gly Phe   49
Gln Ala Leu Gly Asp Ala Ala Asp Ile Arg Phe Val Tyr Thr Pro Ala Met Glu Ser Val   69
Cys Gly Tyr Phe His Arg Ser His Asn Arg Ser Glu Glu Phe Leu Ile Ala Gly Lys Leu   89
Gln Asp Gly Leu Leu His Ile Thr Thr Cys Ser Phe Val Ala Pro Trp Asn Ser Leu Ser  109
Leu Ala Gln Arg Arg Gly Phe Thr Lys Thr Tyr Thr Val Gly Cys Glu Glu Cys Thr Val  129
Phe Pro Cys Leu Ser Ile Pro Cys Lys Leu Gln Ser Gly Thr His Cys Leu Trp Thr Asp  149
Gln Leu Leu Gln Gly Ser Glu Lys Gly Phe Gln Ser Arg His Leu Ala Cys Leu Pro Arg  169
Glu Pro Gly Leu Cys Thr Trp Gln Ser Leu Arg Ser Gln Ile Ala
                                                    +184 SEQ ID NO: 1--
```

Please replace the paragraph on page 15, beginning at line 6 in the original specification, with the following paragraph:

--A second preferred portable DNA sequence of the present invention has the following nucleotide sequence (SEQ ID No: 6):--

Please replace the final paragraph on page 15, bridging to page 16, line 2, with the following paragraph:

--In this second preferred sequence, an open reading frame exists from nucleotides 1 through 432. The first methionine of this reading frame is encoded by nucleotides by 49 through 51 and is the site of translation initiation. It should be noted that the amino acid sequence prescribed by nucleotides 49 through 114 is not found in the mature metalloproteinase. It is believed that this sequence is the leader peptide of the human protein.--

Please replace the paragraph on page 16, beginning at line 3, with the following paragraph:

--A third preferred portable DNA sequence has the nucleotide sequence (SEQ ID No: 7):--

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Please replace the nucleotide sequence on page 28, beginning on line 14, with the following nucleotide sequence:

B10

HgiAI

--(SEQ ID No: 8) 5' GAT CCG TGC ACT TGT GTT CCA CCA CAC

(SEQ ID No: 9) GC ACG TGA ACA CAA GGT GGT GTG

CCA CAA ACT GCT TTC TGT AAC TCT GAC C

GGT GTT TGA CGA AAG ACA TTG AGA CTG GA 3'--

Please replace the paragraph on page 35, beginning at line 13, with the following paragraph:

B11

--In this method, the portable DNA sequences are those synthetic or naturally-occurring polynucleotides described above. In a preferred embodiment of the present method, the portable DNA sequence has the nucleotide sequence SEQ ID No: 5 as follows:--

Please replace the paragraph on page 39, beginning at line 18, with the following paragraph:

B12

--In certain circumstances, the metalloproteinase inhibitor will assume its proper, active structure upon expression in the host microorganism and transport of the protein through the cell wall or membrane into the periplasmic space. This will generally occur if DNA coding for an appropriate leader sequence has been linked to the DNA coding for the recombinant protein. The preferred metalloproteinase inhibitors of the present invention will assume their mature, active form upon translocation out of the inner cell membrane. The structures of numerous signal peptides have been published, for example by Marion E.E. Watson in Nuc. Acid Res. 12: 5145-5164, 1984, specifically incorporated herein by reference. It is intended that these leader sequences, together

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with portable DNA, will direct intracellular production of a fusion protein which will be transported through the cell membrane and will have the leader sequence portion cleaved upon release from the cell.--

Please replace the paragraph on page 41, line 10, with the following paragraph:

--Preparation of Poly(A^+) RNA from HEF-SA Fibroblasts--.

Please replace the paragraph on page 56, beginning on line 10, with the following paragraph:

--The structure of FIBAC A is

(SEQ ID No: 10) GA TCC GCG ATC GGA GTG TAA GAA ATG TGC ACT
(SEQ ID No: 11) G CGC TAG CCT CAC ATT CTT TAC ACG TGA

TGC GTT CCG CCG CAT CCG CAG ACT GCT TTC
ACG CAA GGC GGC GTA GGC GTC TGA CGA AAG

TGC AAC TCT GAC C
ACG TTG AGA CTG GA--

Please replace the paragraph on page 56, beginning on line 19, with the following paragraph:

--Component oligonucleotide FA1 (SEQ ID No: 12) is:
GATCC GCGAT CGGAG TGTAA GAAAT GTGCA CTTGC--

Please replace the paragraph on page 56, beginning on line 21, with the following paragraph:

--Component oligonucleotide FA2 (SEQ ID No: 13) is:
GGAACG CAAGT GCACA TTTCT TACAC TCCGA TCGCG--

Please replace the paragraph on page 56, beginning on line 23, with the following paragraph:

--Component oligonucleotide FA3 (SEQ ID No: 14) is:
GTTC CGCCG CATCC GCAGA CTGCT TTCTG CAACT CTGAC C--

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Please replace the paragraph on page 56, beginning on line 25, with the following paragraph:

B18 --Component oligonucleotide FA4 (SEQ ID No: 15) is:
AGGTC AGAGT TGCAG AAAGC AGTCT GCGGA TGCGG C--

Please replace the sentence on page 57, line 4, with the following sentence:

--Linker A1 (SEQ ID No: 16) is: AATTGGCAG--

Please replace the sentence on page 57, line 5, with the following sentence:

--Linker A2 (SEQ ID No: 17) is: TCGACTGCC--

Please replace the first sentence on page 58 with the following sentence:

B19 --The sequence of the sense strand (SEQ ID No: 18) is:--

Please replace the sentence on page 59, line 11, with the following sentence:

--Linker B1 (SEQ ID No: 19) is: GATCCCAGGCCTGCA--

Please replace the sentence on page 59, line 12, with the following sentence:

--Linker B2 (SEQ ID No: 20) is: GGCCTGG--

Please replace the sentence on page 68, line 4, with the following sentence:

B20 --The second preferred sequence (SEQ ID No: 6) as set forth herein, i.e.,--

Please insert the enclosed paper copy of the sequence listing at the end of the specification.

IN THE CLAIMS:

Please delete claims 1-24 without prejudice or disclaimer thereof, and add new claims 25-42 as follows:

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B22 --25. (New) A purified collagenase inhibitor protein, said protein consisting essentially of an amino acid sequence selected from among the following:

SVB (22)